

REMARKS/ARGUMENTS

In response to the Official Action of July 7, 2006, Applicant encloses a Request for Continuing Examination together with the prescribed fee.

Our submissions supporting the Request are the arguments set out below and the enclosed amendments.

Applicant submits that the enclosed RCE fully complies with 37 CFR 1.114 and therefore asks that the finality of the last report be withdrawn.

Amendments

Claim 1 has been amended to highlight the features that distinguish the ink cartridge of the present invention from the prior art. Basis for the amendments can be seen in figure 9.

Claim 5 has been cancelled.

Accordingly, the amendments do not add any new matter.

35 U.S.C. §103 - Claims 1 to 4

Claims 1 to 3 stand rejected as obvious in light of US 6,158,850 to Cook in view of US 6,322,205 to Childers et al.

To distinguish the present invention from the cited art, claim 1 has been amended to incorporate the interaction between the rigid section of the ink reservoir and the collapsible membrane. The concertina folds in the sides of the membrane ensure a uniform collapse of the top of the reservoir toward the bottom, which avoids the possibility of isolated pockets of ink forming which can occur in ink bags that collapse randomly. This is inefficient use of the available storage volume. To maximize the volume of ink that the printhead draw from the reservoir, the rigid wall sections are configured to provide a barrier to stop the collapsing membrane from obstructing the outlet.

These problems are inherent to the use of sealed, ink bags. However, as discussed our previous response, keeping the ink sealed from air greatly reduces the number of ‘outgassing’ bubbles that get to the printhead. As air comes out of solution, bubbles form and can de-prime the firing chambers of the printhead. A de-primed firing chamber can often fail to refill with ink and be very difficult for a user to purge.

Outgassing also affects the cartridges ability to assess the amount of ink remaining in the cartridge. If ink ejectors are actuating without ejecting ink, the ink consumption rate is less than the rate used by the cartridge integrated circuits.

Pagewidth printheads are particularly prone to the negative effects of outgassing. The longer, relatively narrower ink conduits along the printhead provide a longer fluid path and therefore increased risk of bubble nucleation.

The scanning printhead shown in Cook exposes the ink to air. The ink reservoir 22 has an air space above the ink and the refill likewise keeps air above the ink. This necessitates the air conduit 14 from the reservoir to the refill 18. The collapsible membrane defining at least part of the ink storage volume allows the present invention to do without an air vent while also limiting the ink's exposure to air.

The collapsible bag 22 of Childers (see Fig. 12) clearly allows the folded sides to draw inwardly and at least partially obstruct the outlet 30. The invention attaches the folds to the rigid wall sections to constrain their movement relative to the outlet.

In light of the above, the cited references fail to anticipate the invention defined by the amended claims.

Claim 4 stands rejected as obvious in light of Cook and Childers in view of US 6,250,738 to Waller et al.

As discussed above, Cook does not disclose the features of amended claim 1. Waller also fails to teach a refillable cartridge for sealed ink delivery to the printhead.

Accordingly, the combined disclosures of Cook, Childers and Waller do not teach the combination of elements defined in amended claim 1. It follows that claim 4 is not obvious in view of the cited references.

It is respectfully submitted that the Examiner's rejection has been successfully traversed and the application is now in condition for allowance. Accordingly, favorable reconsideration of the application is courteously solicited.

Very respectfully,

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